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ABSTRACT

A key concept of the Michigan State University model is the clinical behavior style of the teachers it produces. Teachers are expected to approach teaching as clinical practice and to stylize a particular set of activities: describing, analyzing, hypothesizing; prescribing, treating, and observing consequences. Training in the clinical approach occurs, in part, in a clinic-school-network--a cooperative project of the university and one or more school systems--where prospective teachers observe and analyze teacher behavior patterns, where interns teach, and where the university staff develops teaching materials. The model, which was designed by interdisciplinary teams, has five major areas of study: general-liberal education, scholarly modes of knowledge, professional use of knowledge, human learning, and clinical and field study. The trainee moves individually through single purpose experiences and modules, each of which aims for a specific behavioral objective. The modules, as well as information about student progress, evaluation, research, and clinic-school settings (rural, suburban, and urban), are part of an information retrieval system. Trainees may specialize in a subject area and age group. The program also features entrance requirements based on evolving standards, continual feedback for program modification, early trainee experience with children, and faculty currency through the rotation of professors into field experiences. (See ED 034 076 for a reader's guide to the nine funded models.) (LP)

Brief Title:

Guide to
Michigan State University
Teacher Education Model

Houston

ED035602

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A GUIDE TO BEHAVIORAL SCIENCE ELEMENTARY TEACHER EDUCATION PROGRAM

W. Robert Houston

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The following Guide is one of the nine which appears in the publication A Reader's Guide to the Nine Models for Preparing Elementary Teachers. The Guide is available free in limited quantity from the ERIC Clearinghouse on Teacher Education; for $4.00 from American Association of Colleges for Teacher Education, One Dupont Circle, Washington, D.C. 20036; and for $1.25 in microfiche and $15.90 in hard copy from the ERIC Document Reproduction Service (EDRS), 4936 Fairmont Ave., Bethesda, Md. 20014. The order number at EDRS is ED 034 076.

The Clearinghouse is publishing each of the nine guides separately as well as collectively for the convenience of those readers interested in a specific elementary teacher education model. The above individual Guide also is available free in limited quantity from the Clearinghouse and for $0.25 in microfiche and $1.65 in hard copy from EDRS. An abstract of the Michigan State model will appear in the May 1970 Research in Education.

SP003520

Introduction

On October 16, 1967, the U.S. Office of Education issued a request for the development of proposals on educational specifications for comprehensive undergraduate and inservice teacher education programs for elementary teachers. (The term elementary teacher included preschool teachers and teachers through grade 8.)

These proposals were for the design phase (phase I) of an intended three-phase project. By January 1, 1968, 80 proposals had been received. On March 1, 1968, the Bureau of Research awarded nine contracts to design conceptual models for programs for the training of prekindergarten and elementary school teachers, for the preservice as well as inservice components. These models were completed October 31, 1968.

Reports on phase I have been made under the following titles: A Model for the Preparation of Elementary School Teachers (Florida State University), G. Wesley Sowards, project manager; Behavioral Science Elementary Teacher Education Program (Michigan State University), W. Robert Houston, project director; A Competency-Based, Field-Centered Systems Approach to Elementary Education (Northwest Regional Educational Laboratory), H. Del Schalock and James R. Hale, editors; Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers (Syracuse University), William Benjamin and others, authors; The Teacher-Innovator: A Program To Prepare Teachers (Teachers College, Columbia University), Bruce R. Joyce, principal author.

Also, Georgia Educational Model Specifications for the Preparation of Elementary Teachers (The University of Georgia), Charles E. Johnson, Gilbert F. Shearron, and A. John Stauffer, directors; Educational Specifications for a Comprehensive Elementary Teacher Education Program (The University of Toledo), George E. Dickson, director; A Model of Teacher Training for the Individualization of Instruction (University of Pittsburgh), Horton C. Southworth, director; and Model Elementary Teacher Education Program (University of Massachusetts), Dwight Allen, principal investigator, and James M. Cooper, project director.

In phase II, several institutions are studying the feasibility of developing, implementing, and operating a model program based upon specifications in phase I. In the third phase, the U.S. Office of Education hopes to be able to support implementation of some of the model proposals for restructuring teacher education.

Since the models cover almost 6,000 pages devoted to detailed specifications of behavioral objectives, materials, treatments, evaluation of specific elements of the programs, and the like, the ERIC Clearinghouse on Teacher Education, on April 15-16, 1969, sponsored in collaboration with the American Association of Colleges for Teacher Education (AACTE) which acts as its fiscal agent, a writers' conference in which key personnel involved in developing the models wrote guides to their specific programs.

A second-day of verbal interaction followed, at which time the writers discussed their personal reactions to all of the models and past, present, and future implications for teacher education. The panelists wanted to make it clear that in their discussion the models were being described at but one point on a continuum. They called the models catalytic agents which have generated a great deal of discussion, interaction, and continuing change. At this conference they said it was important for them to explore the range of alternative interpretations of issues such as, "What are behavioral objectives? What is a model? What does it mean to personalize? To individualize?" They said that some kind of projection needed to be made about what remains to be done--either by resolving issues, or if they are resolved, to act upon them. This whole exercise [the writers' conference] will have made a major contribution to teacher education if it focuses on the issues at the center of this whole models effort and helps to extend the models, they said.

This guide to the models should assist those who are interested in learning about or implementing them. The entire collection of models is available from the ERIC system in either hard copy or microfiche and from the Government Printing Office (GPO) in a honeycomb binding. The ERIC ordering address is: EDRS, The National Cash Register Co., 4936 Fairmont Avenue, Bethesda, Md. 20014. The GPO address is:, The Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

The reports must be ordered by number. Any request without order numbers will be returned. Some of the reports listed do not have ERIC order numbers. These reports may not be ordered until the listing appears in Research in Education, the monthly abstract journal of ERIC.

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Also available (or to be available soon) are the following related reports: 1. Nine Proposals for Elementary Teacher Education, A Description of Plans To Design Exemplary Training Programs by Nicholas A. Fattu of Indiana University. This document is a summary of the nine originally proposed programs which were funded in phase I of the project for preparing elementary teachers. Available through ERIC: ED 018 677, Price: $6.55 for hard copy; $0.75 for microfiche. 2. Analysis and Evaluation of Plans for Comprehensive Elementary Teacher Education Models by William E. Engbretson of Governors State University. This document is an analysis of the 71 proposed, but unfunded models of phase I. Available through ERIC: ED 027 268, Price: $12.60, hard copy; $1.00, microfiche.

3. A self-initiated critique of the Syracuse University model program, Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers. ED 027 276, Price: $7.20 for hard copy; $0.75 for microfiche. 4. Some Comments on Nine Elementary Teacher Education Models by the System Development Corporation. This paper is adapted from remarks made at an American Educational Research Association conference in November 1968. Available through ERIC: ED 029 813, Price $0.75 for hard copy; $0.25 for microfiche. 5. Twenty-page summaries of the nine reports are available, free of charge, from: Elementary Teacher Education Project, Division of Elementary and Secondary Research, National Center for Educational Research and Development, U.S. Office of Education, 400 Maryland Avenue, S.W., Washington, D.C. 20202.

6. A Bibliography of References Used in the Preparation of Nine Model Teacher Education Programs by James F. Schaefer Jr. (Washington, D.C.: ERIC Clearinghouse on Teacher Education and the Bureau of

Research, U.S. Office of Education, 1969). ED 031 460, Price: $4.95, hard copy; $0.50, microfiche. 7. Analytic Summaries of Specifications for Model Teacher Education Programs, 8. A Short Summary of 10 Model Teacher Education Programs, and 9. Techniques for Developing an Elementary Teacher Education Model are three publications which were issued by the System Development Corporation in July 1969.

It is appropriate to express appreciation to the Clearinghouse staff for its dedication and hard work in completing this manuscript: Dr. Joost Yff, assistant director, and Mrs. Dorothy Mueller, program associate, whose advice and guidance were invaluable; Mrs. Lorraine Poliakoff and Mrs. Suzanne Martin, information analysts, who provided the index to this volume; and to the clerical staff of the Clearinghouse, especially Mrs. Vera Juarez, whose steady assistance made this publication possible. Appreciation also should be expressed to AACTE for its role in the conference and in this Guide, and, of course, to the writers of the guides for their full cooperation both during and after the conference.

The Clearinghouse on Teacher Education is pleased to present this guide to the nine models in the hope that it will stimulate extensive study of ways to improve school personnel preparation and thereby the educational opportunities for America's children and youth.

Kaliopee Lanzillotti, Publications Coordinator

Joel Burdin, Director

February 1970

About ERIC

The Educational Resources Information Center (ERIC) forms a nationwide information system established by the U.S. Office of Education, designed to serve and advance American education. Its basic objective is to provide ideas and information on significant current documents (e.g., research reports, articles, theoretical papers, program descriptions, published or unpublished conference papers, newsletters, and curriculum guides or studies) and to publicize the availability of such documents. Central ERIC is the term given to the function of the U.S. Office of Education, which provides policy, coordination, training, funds, and general services to the 19 clearinghouses in the information system. Each clearinghouse focuses its activities on a separate subject-matter area; acquires, evaluates, abstracts, and indexes documents; processes many significant documents into the ERIC system; and publicizes available ideas and information to the education community through its own publications, those of Central ERIC, and other educational media.

Teacher Education and ERIC

The ERIC Clearinghouse on Teacher Education, established June 20, 1968, is sponsored by three professional groups--the American Association of Colleges for Teacher Education (fiscal agent); the National Commission on Teacher Education and Professional Standards of the National Education Association (NEA); and the Association for Student Teaching, a national affiliate of NEA. It is located at One Dupont Circle, Washington, D.C. 20036.

Scope of Clearinghouse Activities

Users of this guide are encouraged to send to the ERIC Clearinghouse on Teacher Education documents related to its scope, a statement of which follows:

> *The Clearinghouse is responsible for research reports, curriculum descriptions, theoretical papers, addresses, and other materials relative to the preparation of school personnel (nursery, elementary, secondary, and supporting school personnel); the preparation and development of teacher educators; and the profession of teaching. The scope includes recruitment, selection, lifelong personal and professional development, and teacher placement as well as the profession of teaching. While the major interest of the Clearinghouse is professional preparation and practice in America, it also is interested in international aspects of the field.*

The scope also guides the Clearinghouse's Advisory and Policy Council and staff in decisionmaking relative to the commissioning of monographs, bibliographies, and directories. The scope is a flexible guide in the idea and information needs of those concerned with the pre- and inservice preparation of school personnel and the profession of teaching.

How To Use This Guide

Each guide has this general outline: overview, program goals and rationale, selection procedures, professional preservice component, relationship of professional component to academic component, inservice component, faculty requirements and staff utilization, evaluation component, program management, and summary. The Teachers College guide, which was not written at the conference, is the only one with a different outline.

In the Government Printing Office (GPO) edition of the models, some of the pages were numbered differently from the original reports which were processed into the ERIC system. For the readers' convenience, the footnotes to the guides include the page references to both the GPO and ED (ERIC) editions. If the page references in the footnotes were the same for both editions, only one set of page numbers is given.

"ED" or order numbers for the models appear along with the prices and other information in the introduction. Ordering information about other references in the ERIC collection would appear in the bibliography to each guide.

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Michigan State University

OVERVIEW

Radical improvements are needed in teacher education to meet the demands generated by accelerating changes in society. The young, rapidly developing behavioral sciences provide systems of knowledge and inquiry which are directly relevant to teacher preparation programs. The model briefly outlined herein, the Behavioral Science Teacher Education Program (BSTEP) developed at Michigan State University, is a comprehensive program based on the constructs and concepts of the behavioral sciences.

This model emphasizes developmental experiences for prospective teachers beginning in the freshman year and continuing through a full year of internship. Major areas of the program are: (1) general-liberal education, (2) scholarly modes of knowledge, (3) professional use of knowledge, (4) human learning, and (5) clinical study.

Undergraduate teacher preparation is emphasized, but inservice preparation programs for beginning teachers, auxiliary personnel, and professional instructional leaders also are examined. Program evaluation and various aspects of management are given detailed attention.

Special Features

The model incorporates features as broad and varied as modern technology, advanced concepts for understanding human behavior, general-liberal education, and professional translations of behavioral principles and teaching strategies within a wide variety of environments. The comprehensiveness of the plan becomes evident as the reader studies the detailed specifications in the model report.[1] Several special features are worth noting:

1. The teacher education program is comprehensive. Improvement of one phase of a teacher education program, such as professional education, without concurrent attention to the total supporting knowledge-inquiry framework, could only result in a patchwork job, no matter how well engineered the patch might be. The broad leap in teacher education envisioned in BSTEP requires articulation of general-liberal education experiences, extended content specifically related to the curriculum of elementary schools with professional education. Such articulation is explicitly described as it has been developed by scholars in the relevant fields.

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[1]Michigan State University, Behavioral Science Teacher Education Program, Final Report, Vols. I, II, III (Washington, D. C.: Government Printing Office, 1969.)

2. The total undergraduate program recognizes the major objective--elementary teacher preparation with emphasis upon the clinical approach to the analysis of teacher behavior. Teams including more than 150 scholars designed the undergraduate program so that the perspective and special competencies of the various disciplines could be represented. In general-liberal education, for example, one criterion in selecting specific works of literature was, "Would it improve a future teacher's understanding of human behavior?"
3. BSTEP focuses the skills and knowledges of behavioral sciences on educational problems. The study of human behavior undergirds all teaching. Increased technology in schools is not diminishing the role of the teacher, rather it is accenting the search for teachers who are responsive to the needs of the individual pupils. The theories, knowledges, and strategies of behavioral scientists provide a basis for such a responsiveness.
4. Cross-cultural studies are woven into the fabric of the program. Cultural biases cloud most minds. Such biases become particularly evident in ghetto schools when middle class teachers cannot comprehend ghetto children's value systems. To sensitize prospective and inservice teachers to unfamiliar cultures and to enable them to recognize and appreciate the varying postures assumed by people of other cultures, specific experiences have been planned. In the humanities, for example, special attention is given to the study of African, Southeast Asian, and Indian cultures. Actual and simulated experiences with children in varied social-economic American cultures are described. Particular emphasis is placed on understanding inner-city cultural patterns.
5. Evaluation is integral to BSTEP. Continual appraisal of selected experiences and of the total program permeates the enterprise. The evaluation is designed to provide information necessary for program development. No program could be the final answer to the educational needs of today, much less to those of tomorrow. This model provides specific evaluation and development phases which are necessary catalysts in an ever-improving program.
6. The program provides techniques which facilitate the use of new strategies. The research tools of behavioral scientists are expanding so rapidly at the present time that the next few decades are likely to see a surge of input, knowledge, theories, and strategies in the behavioral sciences similar to that which has already occurred in the natural sciences. Teacher education programs must implement these new knowledges as rapidly as possible, eliminating the painful timelag usually associated with man's social development.
7. The program is described in single purpose experiences or modules. At its most explicit level, BSTEP is described in short, discrete single purpose experiences or modules. An illustrative module can be found in the Final Report.[2] Each module is designed to help meet a specific behavioral objective. Modules can be sequenced into individualized instructional programs for preparing elementary teachers.

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[2] Ibid., Vol I, Section 2, p. 32.

8. The resources of an educational network are garnered to improve teacher education. School districts and the university cooperatively contribute to a resource pool designed for improved teacher education. Elementary schools provide the setting for (1) observation and practice by trainees and teachers and (2) substantive episodes and data for teacher education and its improvement. The university contributes its varied and specialized competencies to the development of the total instructional staff of the schools.
9. An information retrieval system modified from the basic information retrieval system and designed especially for this model, is described. A teacher education program as complex as BSTEP requires an extensive information storage system. Data are included on student personnel characteristics, student progress, modular experiences within the program, management procedures, evaluative techniques, clinic school settings, and relevant research in teacher education. Cross-analysis of different phases of the curriculum are possible through an indexing system.
10. Programs are differentiated for teachers of preschool children, primary grade children, and middle school children as well as for varied subject specializations such as science social science, language arts, reading, art, music, and general classroom teaching.

PROGRAM GOALS AND RATIONALE[3]

The Behavioral Science Elementary Teacher Education Program, with its detailed educational specifications and implementations, is designed to achieve these objectives:

1. To provide the future teacher with a broad experience in general education including the disciplines of the humanities, science, and social science.
2. To introduce, on a systematic basis, research and clinical experience into the decisionmaking process which serves as the means for continued educational improvement.
3. To utilize a new kind of laboratory and clinical base as the foundation for pre- and inservice teacher education programs.
4. To prepare a new kind of teacher for the nation's schools--one who:
   a. Engages in teaching as a clinical practice.
   b. Understands human learning, its capacity, and its environmental characteristics.
   c. Assumes the role of a responsible agent in social change.

The BSTEP model uses the term behavioral science to mean those systems of inquiry which constitute reliable and valid sources of information about human behavior. In this context, "science" is accepted as the process of orderly inquiry and systematic organization of tested knowledge about natural

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[3] Ibid., Vol I, Section 2, pp. 1-29; Section 3, pp. 1-57.

phenomena. Behavioral science applies this process to the study of man in three spheres: the nature of man's self-awareness, the nature of man's interaction with man and his social systems, and the nature of man's interaction with his physical environment.

A key concept of the BSTEP model is clinical behavior style. The major function of this concept is to regularize the behavior of teachers. Clinical behavior style denotes those particular and stylized sets of activities and mental processes which a practitioner possesses. Such a practitioner of education will be specifically trained to utilize his client-related experience as the basis for continuous learning and improvement of his skills as a teacher. The clinical behavior style which is appropriate for a professional teacher consists of six phases: describing, analyzing, hypothesizing, prescribing, treating, and observing consequences. The last phase, observing consequences of the treatment administered, leads in turn to the first by a process of recycling in order to describe the changed situation.

The professional foundations of the program are centered on the behavioral sciences for two reasons: (1) The dominate task of all educational activity is to develop pupil behavior within various settings. The behavioral sciences provide the systems of knowledge and inquiry most relatable to this task. (2) A distinctive feature of empirical science as a way of acquiring knowledge is that it is self-corrective.

Systematic reappraisal of both output (organized knowledge) and methods used to produce that output (methodology) is followed by revision according to the findings of the reappraisal. Because of these two basic characteristics, the behavioral sciences suggest the development of a clinical behavior style of teaching which enables teachers to base their current practice on available knowledge, to produce new information relevant to practice, and to revise practice on the basis of new information as it becomes available.

Teams of behavioral scientists representing various disciplines recently have begun to examine major social problems. As systematic interrelationships are explored in more detail, the possibilities for a more comprehensive theory of behavior are enhanced. As theories of behavior become more comprehensive, as it becomes possible to explain and predict behavioral outcomes in situations with many biological, psychological, and cultural variables operating simultaneously, then behavioral theories become still more useful to the educational practitioner.

SELECTION PROCEDURES

Research results have tended to emphasize the lack of empirical evidence on teaching effectiveness. Research by Barr and his associates over three decades, the monumental work of David Ryans, and other efforts in this area have produced vague and sometimes conflicting findings. All too often the research was limited in scope so that only one or a few of the potential contributing factors were considered. Personal characteristics, teacher

preparation program components, and the teaching environment all contribute to "effectiveness."[4] The relationship among these factors is potentially important.

Rather than attempt to list restrictive criteria for program admission, the model team chose to monitor students' progress and effectiveness and to develop entrance requirements based on evolving standards. The position was taken that students who are admissible to the university and to elementary education would initially be admissible to BSTEP. To assure base-line data, a series of instruments for initially assessing student input characteristics is suggested.[5] Student input characteristics, success in various program elements, and practice during internship would become parts of an evaluation cycle leading to more selective student inputs. This stance is consistent with the clinical style which permeates the entire program.

PROFESSIONAL PRESERVICE COMPONENT

BSTEP emphasizes developmental professional experiences which begin a prospective teacher's first year of college and continue throughout the preservice education into the initial years of teaching. The undergraduate program of each student includes: (1) a broad, basic core of general-liberal education, (2) a review of the fields of knowledge in terms of their structure and content, with emphasis on the methods of inquiry and learning which characterize scholarly endeavor in different disciplines, (3) a study of human learning based upon behavioral science concepts and research, (4) an analytical study of the teaching act in different types of educational environments, and (5) a year of intern teaching in a school district as part of an instructional team recruited from the university and the local district.

The undergraduate program will be described in two sections. In this section the professional aspects of the program will be described while in the following section of this report, the supporting general-liberal education components will be described.

Professional Use of Knowledge

In professional use of knowledge, the prospective teacher learns how to translate knowledge into educational action in classrooms and communities. Building upon a structured general-liberal education and the study of human learning, this area focuses upon the study of instructional strategies with particular emphasis upon the specific content included in the elementary school. Simulated and live contact with elementary school-age children is planned.

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[4] The term "effectiveness" is relative and [illegible] defined in restricted or ambiguous terms, thus adding to the confusi[illegible]

[5] Michigan State University, op. cit., Vol. II, Section 9, pp. 40-41.

Experiences in the area of reading, language arts, social studies, science, and mathematics are summarized in the following paragraphs, and detailed specifications are included in the Final Report.[6]

Reading. A major portion of this component is devoted to competencies related to teaching developmental reading. Optional experiences focus on teaching reading in the content areas and recreational reading. The program is designed to develop knowledge, comprehension, application, and analysis of the techniques used in teaching reading while also building a value system which would guide the teacher trainee's use of the accumulated cognitive learnings about reading instruction.

Language Arts. The language arts component focuses on the skills involved in listening, speaking, writing, and the supportive tool skills of spelling and handwriting. The strategy for studying these skills includes an examination of the objectives, instructional procedures, and evaluation techniques for each of the language arts through analysis of representative programs in existing elementary schools. This examination is filtered through the study of affecting variables such as sociocultural, environmental and personal-professional influences to permit the examination of language arts to be both analytically descriptive and prescriptive.

Social Studies. Responsible, informed decisionmaking is the dominant theme pervading the social studies component. This theme is developed in two ways: by sensitizing undergraduate students to the range of decisions they are likely to encounter as teachers of the social studies and by giving them actual experiences in making these decisions. A wide variety of instructional settings provide the foci for studying decisionmaking. These include actual and simulated experiences in elementary classrooms, microteaching, self-study projects, clinical experiences, and many different kinds of laboratory and field experiences.

Science. Prospective teachers of elementary science embark upon a series of experiences designed to implement the concepts previously studied and to develop meaningful patterns of classroom activity. By means of autotutorial and small and large group instruction, students are involved in a multidimensional study of elementary science philosophy, curricula, methods, skills, materials selection, media utilization, and evaluation techniques. The professional appraisal of procedures of scientific inquiry, attitudinal change, and experimental design necessarily reflects societal as well as technological issues and problems.

Mathematics. The study of mathematics gives the preparatory elementary teacher an opportunity to translate the mathematics previously learned into mathematical concepts and skills for elementary pupils. The teacher becomes aware of the instructional dimensions to be considered in planning for related clinical activities.

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[6] Ibid., Vol. II, Section 6.

Human Learning. Specific study of human learning occurs twice in the undergraduate program. Exploring human capacity for learning, understanding environmental systems, and inquiring into cognitive development are the three basic behavioral areas which planned educational experience must bring into interaction. The first contact with systematic study of human learning occurs early in the prospective teacher's undergraduate program. Various approaches to the problems of learning and human development are explored. The issues in learning theory and research are examined as a means of explaining the impact of environmental systems on a teacher's decisionmaking processes. This first experience thus provides a basis for further professional growth.

The second experience in the study of human learning is concurrent with internship. At this time the intern studies the environmental systems which influence the growth of the human being and with which the educational process must be concerned. It is assumed that an elementary pupil lives in a series of environmental systems: his own internal environment, the environment created by the family, the environment created by the school, the environment created by the community, and the larger cultural environment consisting of elements and forces from the national and international arenas. The more skill and perceptivity that can be developed in analyzing positive and negative elements within these several environments, the more sophisticated response the educational worker can make in diagnosing and developing the behavioral competencies of the pupil.

The general purposes of this second area of human learning study are to enable the teacher-intern:

1. To perceive the school as a social institution with present and future relationships to other major institutions of our culture and of selected cultures.
2. To utilize such basic concepts as stratification, role, status, and prestige as tools of analysis for clearer understanding of classroom, faculty, institutional, and societal situations.
3. To understand the potential and actual contributions of nonschool agencies to curricular experiences of young people.
4. To formulate a meaningful relationship among the many factors which influence the pupil's development.

With increasing urbanization in American society and a changing cultural orientation, tools of inquiry in analyzing societal forces and experience in using the tools of inquiry in actual situations are important assets to teachers. As one experience toward mastering the use of the methods, concepts, and principles of environmental investigation, students make an analytical study of their teaching community during internship. Specifications for this and other experiences in human learning study are included in the Final Report.[7]

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[7] Ibid.

Clinical and Field Experiences

Clinical experiences:

1. Are client-related.
2. Include manipulation of instructional variables.
3. Include the element of feedback so that improved instruction occurs.

These three elements interact to give clinical a connotation which is greater than the sum of its parts. In the context of professional training, clincial connotes the behavior style (or gaining of behavior style) appropriate to professional service. To develop and expand a prospective teacher's facility in employing a clinical behavior style in teaching, progressive intensity of a preprofessional contact with children and schools is built into the preparatory program. Clinical procedures are analyzed and practiced through both simulated and actual situations. Four sets of clinical and field experiences are described herein with detailed specifications presented in the Final Report.[8]

Tutorial. Early experience with children in a teacher education program is deemed important for reality testing purposes. During the first two years of college, the student works in one or more child-related roles. During this period he might work with children as an assistant elementary teacher, at the local YMCA, in a children's hospital, in Head Start and other preschool programs, in a settlement house, summer camp, or with scouting programs. Purposes of this experience include: (1) role identification, (2) self-screening, (3) reality testing of children-models, and (4) general awareness of people--their hopes, dreams, and ways of acting.

Career-Decision Seminar. The general purpose of this seminar is to aid prospective teachers to make adequate decisions concerning four questions:

1. Should I prepare to become a teacher?
2. If so, with what general age children am I most likely to be effective?
3. Do I prefer the activities and role of a general classroom teacher or should I specialize in a subject area?
4. If I choose to be a subject specialist, which area is most suitable?

Since many facets of the curriculum are tailored according to the particular interest of teacher-trainees, an early decision supports a more precisely focused program. This decision seminar is designed for students in the early phase of their preparation program. While decisions made at this time are not binding, change at a later time would require some restructuring and redesigning of a student's program. Following the seminar, some students may transfer to the associate teacher curriculum or to another program in the university. The flow of the four questions to which a student responds during the decision seminar is represented in figure 1. In addition to assisting the student to answer questions about his career, the first formal clinical experience is designed to:

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[8] Ibid., Vol. I, Section 3.

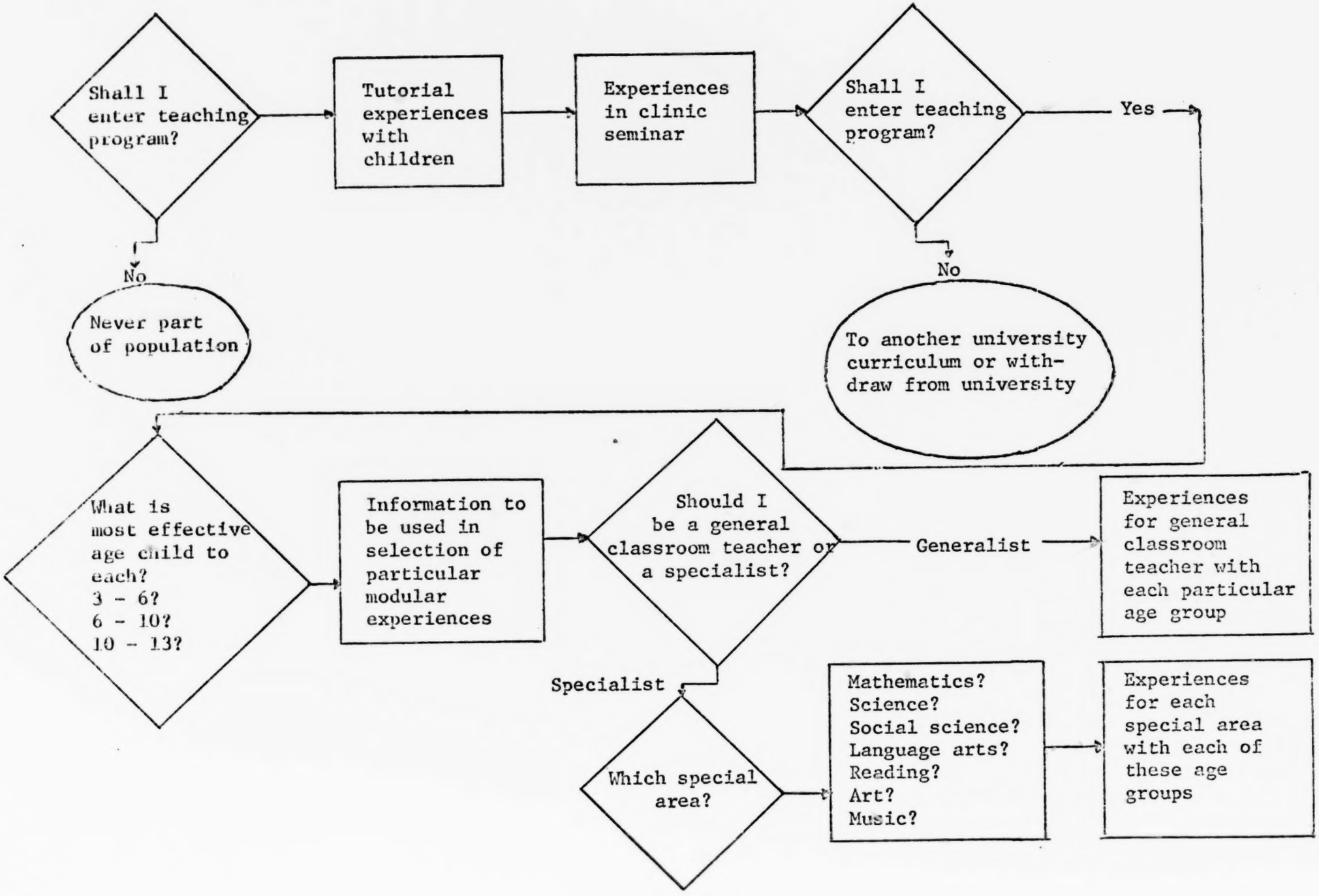

FIGURE 1

FLOW OF QUESTIONS TO WHICH A STUDENT RESPONDS
DURING THE DECISION SEMINAR

1. Collect actuarial and personal data on students as base-line information for study programs.
2. Followup tutorial experiences of students who have worked with children in a settlement house, boys camp, YMCA, playground supervision, or as an assistant teacher.
3. Introduce the role and functions of an elementary teacher.
4. Provide simulated classroom experiences for reality testing purposes
5. Provide the first evaluation checkpoint for candidates.

Teacher Analysis. This set of experiences provides various opportunities to test teaching skills in simulated or real classroom situations. Three types of experiences illustrate possible activities appropriate at this point in the training program. First, each student analyzes sets of visually recorded classroom scenes or vignettes. What occurred? What relevant conditions existed? What decisions did the teacher make? What were the consequences? What suggestions would improve the learning? Second, each student participates in simulated classroom episodes. This permits him to make his first translation of ideas from analysis into practice. Third, each student works with three to five pupils in microteaching experiences. These episodes can be video taped so the student can review and evaluate his teaching performance as he works on various aspects of the teaching act.

Teaching is a complex operation involving analysis of many variables and selection from a galaxy of potential decisions. Controlling the introduction of these variables in the initial phases of teacher education permits an orderly and systematic initiation into teaching.

Internship. Students are assigned full-time to an elementary classroom for an academic year under the guidance of an intern consultant.[9] Autonomy and responsibility for classroom activities, with significant assistance from university and school district resources, characterize this phase of the undergraduate program.

Internship provides the opportunity to translate, as a beginning teacher, the study of human behavior into strategies of instruction. The intern consultant provides assistance and supervision during this period.

Teacher Specialization

While the preceding descriptions of the five major curricular areas suggest the general nature of the teacher preparation program, they do not provide the detail which reveals its scope and sequence nor do they indicate alternate routes that students may follow.

To date most elementary teacher education programs have been designed for a general classroom teacher. The need for such teachers and for a training program for them is expected to continue in the foreseeable future. Preschool

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[9] The intern consultant is a highly skilled experienced teacher selected from an elementary school to work full-time with five or six intern teachers. This role has been developed during the past eight years at Michigan State University in the Elementary Intern Program.

and primary grades may continue to rely upon a person of general subject-centered skills, and many schools are likely to retain self-contained classrooms in the upper grades for many years. There is emerging, however, a second teacher role in the elementary school--that of the subject-matter specialist. Two separate organizational approaches, the development of the middle school and team teaching, require teachers with strong subject-matter competency. Further, experimental curriculum movements in mathematics, science, social science, and language demand increased expertise on the part of the teacher. The expanding need in the future is likely to be for teachers who have specialized in subject areas such as mathematics, science, language arts, social science, reading, art, and music.

Differences in the ages of children also require differences in the backgrounds of teachers. Professional translation of human study is focused upon the unique needs of each group of children. Program branching, therefore, is provided those students planning to teach preschool, primary school, and middle school children. Preschool includes children ages 3 through 6 or nursery school and kindergarten. Primary school is defined for our purposes as grades 1 through 4 in a grade school or ages 6-10. Middle school includes children from 10-13 or until entry into the high school program. Thus program differentiation and specialization occurs along two dimensions:

1. The amount and area of subject-matter specialization.
2. The age of pupils to be taught.

The choices possible along these two dimensions generate at least 24 program modifications as illustrated in table 1.

TABLE I
PROGRAM MODIFICATIONS

Teacher specialization	Elementary school		
	Pre-school	Primary school	Middle school
General classroom teacher	x	x	x
Mathematics teacher	x	x	x
Science teacher	x	x	x
Social science teacher	x	x	x
Language arts teacher	x	x	x
Reading teacher	x	x	x
Art teacher	x	x	x
Music teacher	x	x	x

RELATIONSHIP OF PROFESSIONAL COMPONENT TO ACADEMIC COMPONENT

Integral to the total teacher education program are the discipline-centered aspects. Two broad areas are directly relevant to the program's goals: general-liberal education and scholarly modes of knowledge.

General-liberal education provides a broad basic core for the program. Students learn to understand the role language plays in a society, to comprehend the physical and biological aspects of the world, to understand differing cultures, to become more sensitive to their own role in modern society, to grasp relationships as expressed in mathematics, and to conceptualize man's potentialities.

Scholarly modes of knowledge differs from general-liberal education in two essential ways: (1) the content in scholarly modes of knowledge is more directly applicable to teaching in the elementary school and (2) the modes or styles of inquiry of scholars are stressed.

General-Liberal Education

A broad, basic core of general-liberal education, designed to foster individual fulfillment and to prepare citizens for participation in our society, is necessary in teacher preparation.

The encompassing and overriding objective of general-liberal education is to relate the student's knowledge to the study of human behavior. Rather than providing a series of survey courses, this model proposes a basic core of general-liberal education experiences which emphasize the contributions the various disciplines of liberal arts and sciences make to an understanding of man, his behavior, his ideas, his society, and his world. The intent is to help prospective teachers develop the basic analytical skills which are prerequisites for making intelligent decisions about current societal problems. Provision is made for students to become active participants in formulating relevant educational structures which bridge personal experience and curriculum content.

The general-liberal education area is divided into three components: humanities, social science, and natural science, each of which is briefly described in the following paragraphs.

Humanities. The principle characteristic of the humanities is the involvement of the student in questions of value such as "What is man?" "What is the good, the true, and the beautiful?" and "What should man live for?" The selection of content, the exercise in basic skills, and the module organization are designed to promote an understanding of human behavior in humanistic terms. The student begins his study of humanities with a workshop laboratory experience in the disciplines of literature, art, and music. After exposure to the way in which a writer writes, an artist designs, and a musician composes, the student is ready for an integrated study of the humanities.

In a subsequent series of experiences the student explores the basic issues of western man, classics of the West, and the American quest. Each part includes some materials required of all students and a series of alternative assignments and experiences from which a student may choose portions of his program. These alternatives are not offered as random options, but are designed to give depth of experience in equally relevant materials.

Exposure to the thoughts, institutions, and arts of the nonwestern world expand the student's view by sensitizing him to cultural biases. While the cultures of Africa, India, and Southeast Asia are envisioned as relevant to the program, only the Africa sequence is included in this model and is intended to serve as a paradigm for this phase of the program.

Social Science. The social science component introduces the student to the nature of the social science disciplines including geography, anthropology, sociology, political science, and economics. These fields are represented as systems. Geography, for example, is represented as a fundamental ecological system, anthropology as a cultural system, sociology as a social system. Through a carefully structured sequence of experiences, the decisionmaking strategies of social scientists are explored, and students are provided an opportunity to employ these decisionmaking processes in real and simulated situations. Experiences are designed to sensitize the student to the possibilities that lie in the use of these skills. The student becomes aware of the interactions among social forces and their impact on education.

Natural Science. The natural sciences and mathematics have contributed greatly to man's understanding of his universe and his relationship to other organisms and objects he perceives as existing. Western thought, in particular, has been influenced by the development of logic and mathematical proof and by the accumulated data from which science induces the evidence for a law. The central theme of this component is the effect upon our culture by the natural sciences and mathematics.

Scholarly Modes of Knowledge

While general-liberal education provides the foundation for a life-long search for meaning and values, the study of the scholarly modes of knowledge opens the door to disciplined inquiry into those areas related to the elementary school curriculum. The component parts of this area are linguistics, communication, literature for children, fine arts, social science, natural science, and mathematics. A detailed set of instructional specifications for each are included in the Final Report;[10] a brief description of each follows.

Linguistics. The basic goals of the linguistics component are: (1) to explore the nature of language as it has been determined by linguistic research, (2) to distinguish facts from emotionally based or culturally determined views about language, and (3) to investigate those results of contemporary research on the grammar of English which are directly relevant

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[10] Michigan State University, op. cit., Vol. II, Section 5.

to the student's future role as an elementary school teacher. The component includes five sections: basic concepts; the phonological system of English; English morphology, semantics, and the lexicon; English syntax; and regional and social dialects of American English.

For each section, in addition to lectures and group discussions, the student is involved in independent work concerning the relationship of the theoretical material to the stages in children's acquisition of language and to the teaching of reading, spelling, and grammar in the elementary school.

Communication. Emphasis is placed on verbal and nonverbal communication patterns. Simulated experience with cross-cultural contacts aids the student to better understand himself and his feelings toward others. As he increases his understanding of self and others, he is expected to analyze his encoding and decoding of messages and his choice of channels. These experiences are not simply "speech" or the sending aspects of communication, but involve message reception and decoding as well. The affective domain is tapped as students explore their own reactions to simulated episodes. A key behavior sought is the ability of the prospective teacher to analyze communication events and patterns and to relate these to his work as a teacher.

Literature for Children. The study of literature for children combines the literary arts and the graphic arts. Emphasis is placed on the characteristics of the genres of literature and on the media and styles of art used by artists to illustrate children's books. Considerable attention is given to the study of the techniques and materials that the teacher can use to create an environment in which children can grow to enjoy and appreciate excellent literature. Students also explore many other uses of literature by children and the probable effects of literature upon children.

Fine Arts. The fine arts component is considered in three aspects: art, music, and dance and drama. Emphasis is on the respective mode of perception and creativity of each area: visual, aural, and motor. Teaching art values, concepts, and productive behavior in children forms a basic concern. The tangible objects of art are subjects of aesthetic evaluation as well as the end products of a disciplined process. The student manipulates materials from which works of art are constructed.

The aural mode of perception is encouraged through music. Experience in listening to both familiar and unfamiliar musical forms assists students in developing a tolerance toward all forms of musical expression.

Dance and drama provide an opportunity to respond aesthetically through the use of the whole person. The bodily form of expression and communication in dance and drama provide the future teacher with experience in objectifying in motion inner-feelings and thoughts. Such experiences are designed to make him more aware of the symbolic character of physical motion, and awareness which can increase his sensitivity to children and their play.

Social Science. The social science component is devoted to social science theory and research. Emphasis is placed on the interaction that takes place between personality and basic social systems. How, for example, does an

individual effect the society of which he is a part? What role does society play in the life of the individual? A theme followed throughout this study is the nature of conflict involved in these interactions and the resultant decision-making process.

Natural Science. Natural science experiences are designed to develop the prospective elementary teacher's competency in the use of ideas and materials appropriate to elementary school science. Examples are taken from geological, biological, and physical sciences. Though certain modules are required of all students, optional experiences are also available.

Much of the component can be handled through directed independent study using an autotutorial approach. The laboratory then becomes integral to a variety of independent activities.

Mathematics. The need of a basic background for teaching elementary school mathematics directs the choice of content and the method of approach in this component. The foundations of arithmetic, algebra, and geometry form the basic core. Experiences in mathematics within scholarly modes of knowledge are interrelated with those in professional use of knowledge and in the clinical components. Thus, as the student learns mathematical content through lectures or directed independent study, he can practice the concept immediately in a mathematics laboratory, consider the implications for professional use, and employ his knowledge in a field setting.

INSERVICE COMPONENT

The completion of preservice teacher education requirements is only the beginning of a professional teacher's development. Joint responsibility by schools and universities for the inservice education of all professional and ancillary personnel is a necessity today. Previously the university tacitly accepted almost complete responsibility for preservice education and graduate study (often in isolation from the real world of teaching) while the elementary schools sometimes designed inservice experiences for their staff. Such lack of articulation in teacher education can no longer be tolerated!

BSTEP is predicated upon joint responsibility by several educational agencies for the continuing education of teaching staff. A clinic-school network is established to promote continual feedback and development of the program. A college or university works with one or more school systems.

Elementary schools become the clinic setting for preservice teacher development. They furnish the basis for material upon which the undergraduate program is built, and they become the testing ground for teacher education theories. Prospective teachers observe pupils there and analyze teacher-behavior patterns. Interns teach there. University staff work there in developing appropriate materials for undergraduate instruction.

In a similar manner the university and the elementary school cooperate to promote the continuing education of practicing teachers. Through joint school district-university arrangements, seminars are developed. University

scholars become sources of assistance in specific school studies concerned with improving instruction. Human and material resources from both the local school system and the teacher education institution assist beginning teachers. Building upon intern experiences, skill in utilizing inquiry modes is further extended through a variety of learning situations.

Such a program must, of necessity, be flexible. Differences within a teaching staff in personal characteristics, fields of specialization, and skills in analyzing human potential, for example, preclude formalization. In the present model some core experiences are described which are relevant to the continuing study of human nature, but this work is only a beginning in the needed comprehensive program. Analytic tools to assess the extensiveness of the clinical approach used by a teacher in a functioning classroom must be designed, tested, and modified before inservice education can be effective in improving the clinical stance.

Advanced study in the behavioral sciences for practicing teachers is directed toward a more sophisticated understanding of the variety of environments within which children develop, and the creation and utilization of the diagnostic, prescriptive, and evaluative tools for working with them in the school-community situation.

The teacher preparation model provides for a small proportion of post-MA teachers with highly developed clinical skills, leadership ability, and demonstrated success in teaching to be selected for extensive training in professional leadership. Such personnel would become catalyzers for further development and refinement of the clinical stance in teacher education. They would work with undergraduates, serve as team leaders in instructional team-teaching situations, be intern consultants, develop elementary school and university curriculum materials, be elementary school principals, and assist with elementary pupils having unusual or difficult learning problems.

While each instructional leader's preparation program would be tailored to individual job descriptions, it would include special seminars in research, educational technology, clinical practice, and educational strategies. Part of his time might be spent in writing curriculum materials, trying out and evaluating recent innovations, and studying in exemplary schools.

FACULTY REQUIREMENTS AND STAFF UTILIZATION

Integral to the continued development of BSTEP is a dynamic faculty who understand and practice clinical procedures in its own instruction and research. To develop this posture and to provide for program and faculty currency, two procedures are recommended: program development-trial-evaluation cycles, and specialized consultation services.

When possible, rotation between persons engaged in writing instructional modules, delivering such modules, and directing clinical experiences has been encouraged. With those instructors from human learning and professional use of knowledge components, this is particularly significant for they must maintain constant feedback from field experiences to optimize the content and scope

of their work with students. To provide the feedback data-base for development of the experiences for which they are responsible, professors must have the opportunity to followup their instruction with reality-testing in the field. As a result of this kind of testing, materials and experience modules would likely be modified or redesigned. Further, as the staff redesigns the curriculum and tests its own ideas, its understanding of salient curriculum aspects would be enhanced.

Thus as each professor utilizes the approach identified as clinical style, he becomes a model for the practitioner and the prospective teacher to observe a given modus operandi. Further, as the consequences of the program are acted on by the trainee, the field environment provides myriad inputs which provide the base for more refined and sophisticated outputs in the instructional setting. Thus the instructor and program developer (the same persons at different points in time) become integral partners in assessing and contributing the most significant inputs from the field into the mainstream of program development. From these experiences come the collection and refinement of simulated episodes, written vignettes, filmed and taped records, and other experiences which provide problemsolving settings for teacher trainees.

The second needed aspect of faculty development comes from researchers and scholars in all fields of endeavor. Rapid development of new knowledge, methods of gathering data, and procedures for solving problems make it imperative that the program elements be as current as possible and that the professional staff have access to the most recent findings in their field. This is not only true for the academic areas related to general-liberal education and scholarly modes of knowledge, but also to the professional areas which draw from the behavioral sciences. Consultants, who are working on the frontiers of man's knowledge in various disciplines, periodically would work with the program development team to assure an adequate current data base.

EVALUATION COMPONENT

A viable teacher education program requires a carefully designed, extensive and workable evaluation system which in turn supports program development. Cognitive, affective, and psychomotor domains must be included in such assessments. In the past, evaluations have been hampered by lack of information vis-a-vis the student and teacher personal characteristics, specific program components, and the social milieu in which the teacher is functioning. In a sense, evaluation permeates the entire program. It is a necessary and fundamental aspect of the clinical style; it forms the basis for program modification and development; and it is inherent in instructional strategies. While the model report describes the evaluation system in some detail, this summary is limited to one facilitating phase--an information retrieval system.

Information Retrieval System

To describe, sort, and utilize the instructional recommendations included in the program, more than 2,700 short, explicit single-purpose experiences or modules were written and included in the BSTEP report. These have been keypunched and loaded onto a Computer Data Corporation 3600 System at Michigan State University. Figure 2 represents an illustrative module.

Line number (digits 6-8)

Unique module number (digits 1-5)

*OBJECTIVES	LEARNER DIAGNOSES FUNCTIONAL READING OF ONE PUPIL AND TEACHES ONE FUNCTIONAL READING SKILL BASED ON DIAGNOSIS.	00669016 00669017
*PREREQUISITE	SUCCESSFUL COMPLETION OF PREVIOUS MODULES IN SECTION VIII AND OF SECTIONS I-VI.	00669018 00669019
*EXPERIENCE	WORKING IN A TUTORIAL SETTING LEARNER DIAGNOSIS FUNCTIONAL READING SKILLS OF ONE PUPIL AND USES THAT DIAGNOSIS TO TEACH THE CHILD ONE FUNCTIONAL READING SKILL. LESSON IS VIDEO-TAPED AND LEARNER EVALUATES HIS WORK WITH HELP OF INSTRUCTOR.	00669011 00669012 00669013 00669014 00669015
*SETTING	OTHER (SPECIFY) TUTORIAL, COLLEGE	00669010
*MATERIALS	VIDEO-TAPING EQUIPMENT.	00669005
*LEVEL	GRADES 3-4 GRADES 5-8	00669008
*GENERAL	ALL CANDIDATES	00669007
*HOURS	2	00669006
*EVALUATION	LEARNER CORRECTLY DIAGNOSIS FUNCTIONAL READING SKILLS OF ONE PUPIL AND APPLIES APPROPRIATE TECHNIQUES AND MATERIALS IN TEACHING THE PUPIL ONE FUNCTIONAL READING SKILL.	00669020 00669021 00669022 00669023
*FILE	FUNCTIONAL READING INSTRUCTIONAL PRACTICE CLINICAL	00669009

Level--For preschool teachers; grades 1-4; grades 5-8; all candidates
General--General classroom teacher, Subject specialist or both
Hours--Approximate time for student to complete experience
File--Index terms under which this module filed

FIGURE 2

ILLUSTRATIVE KEY-PUNCHED MODULE

To adequately store and process these data, a custom-designed storage and information retrieval (IR) system was designed. This IR system was built upon the basic index and retrieval system (acronym BIRS) which was developed by Professor John Vinsonhaler and his colleagues at MSU.[11]

This system is capable of handling alphanumeric data and to process it at a rapid rate. The system is capable of examining natural language and conducting categorical and/or logical searches among the documents or searching for main ideas within a given document. Similarities in kinds of ideas, experiences, objectives, evaluative devices, and materials can be examined from among the many parts of the educational program.

Use of the modular approach assures great flexibility in implementation by teacher education institutions and yet provides explicit detail of program components. It provides a solid basis for program evaluation and cost analysis.

In the individualized, behaviorally oriented system advocated in BSTEP, an elaborate record system is necessary to encompass the pattern of experiences, successes, and failures which would characterize each student's participation in the project. The information processing power of the computer could be utilized to establish a student record system, to trace progress in the program, and to provide basic data for program evaluation.

Each modular experience can potentially be tested for its contribution to a teacher's development, and test results can be compared with those of alternative experiences. The sequence of modular experiences can be assessed for continuity. Student assessment during the process, information retrieval built-in check points, professor evaluation, and student performance during internship are some avenues for testing modules. These same procedures are useful in examining the effectiveness of module clusters in the total program.

The teacher education program is designed for constant evaluation and feedback. With a clinic-school network to serve as a laboratory in many settings (rural, suburban, and inner-city), varied forms of program assessment are possible. Periodic sampling of previously mastered performances with different segments of the population could be useful in ascertaining the extent of concept maintenance and inquiry skills.

Evaluation leads to constructive program development. A highly refined feedback system contributes to both. Some experienced teachers from clinic schools return to college to work with undergraduates. Some of these teachers would contribute through program development, refining teacher behavior analyses, simulation, and microteaching while other teachers would focus primarily on educational research. Upper classmen work with freshmen in the career-decision seminar. And, as noted earlier, professional faculty are assigned to cycles

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[11]The reader is referred to the following discussions of the capabilities of the system:

John F. Vinsonhaler, "Improving the Accessibility of Educational Materials," USOE Project No. 5-1144, October 1967.

John F. Vinsonhaler, Technical Manual, Basic Indexing and Retrieval System, (BIRS 2.5) (East Lansing: Learning Systems Institute, Michigan State University, 1968.)

including teaching, working with interns and teachers, and program development. Through designed experiences with educators from various levels of preparation, trainees more readily move from student-oriented to profession-oriented behavior.

Such regeneration through recycling is integral to the clinical approach emphasized in this model. Not only is the program designed to develop a clinical behavior style in graduates, it also utilizes a clinical approach in its own instruction of students and provides for continued renewal through analysis of the program itself.

PROGRAM MANAGEMENT

An extensive, viable, and flexible management system is necessary to support and be responsive to the needs of a complex enterprise as that described previously. The organizational plan includes five subsystems: information retrieval, program development, clinical experiences, evaluation, and management planning.

The information retrieval subsystem carries responsibility for providing the necessary retrieval facilities for the project. Student records, research data, and clinic-school information are readily handled in the IR system. The information storage and retrieval system is described in detail in the Final Report.[12] In the proposed information retrieval system, modular experiences can be added or modified, thus readily updating the program description.

The program development subsystem is responsible for developing and ultimately delivering the nonclinical experiences to students. Program development is accomplished by several means: revision of current modular experiences, input of new ideas or modes of inquiry from scholars in various content areas, the addition of new program tracts, and revision in the clustering and sequencing of instructional modules. Drawing upon data from the evaluation subsystem and direct feedback from instructor-curriculum writers, materials and experience modules are modified and expanded or deleted.

The clinical experience subsystem is responsible for developing clinical experiences for teacher trainees in actual or simulated settings. This subsystem is responsible for permeating clinical experiences and clinical behavior styles throughout the program. While not all clinical experiences occur in elementary school settings, the clinic-school network has been recommended to promote continual feedback and development of the program.

The evaluation subsystem assesses the viability of the program and its various components. It consults with program development personnel in precisely stating objectives; it mobilizes the instruments and analytical techniques of the behavioral sciences to observe, measure, and assess the overt actions of individuals and groups; and it suggests research designs to study program effectiveness.

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[12] Michigan State University, op. cit., Vol. III, Section 10; and in Section 11, pp. 28-36.

The management planning subsystem assists the other subsystems in the areas of systems planning, systems development, and systems analysis. Expertise in the use of PERT, PERT-COST, PPBS, and other management-planning tools are located in the subsystem. Efficiency of operation coupled with adaptability are its objectives.

The management aspects of operating such a network and a prototype clinic-center network now in operation are discussed in the Final Report.[13] The implications of the clinic-school network for continued professional study also are outlined.[14]

SUMMARY

The development of a teacher education program model such as BSTEP required the resources of an extensive professional team. Theoretical constructs must be translated into working models and explicit instructional packages and patterns. More than 150 professional people contributed their time, effort, and expertise to the development of this model. Their names, project roles, and institutional affiliations are listed in the Final Report.[15]

Those whose primary professional concern is teacher education were extremely gratified by the interest and enthusiasm exhibited by academicians and scholars from other fields. Teams of educationists and scholars in natural science, social science, and humanities worked closely together to create the program. While the product of their work is extremely important in that it represents a beginning point for accelerated improvement of teacher education, the dialogue established between professional educationists and academic disciplinarians is more significant. Interest far beyond that required by the formal committments was exhibited by team members through their work. Since the completion of the BSTEP model, a number of academic departments within the university have taken steps on their own to implement aspects of the recommendations.

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[13] Ibid., Vol. III, Section 9.

[14] Ibid., Vol. III, Section 8.

[15] Ibid., Vol. I, Section 1.

BIBLIOGRAPHY

Michigan State University, Behavioral Science Teacher Education Program, Final Report, Vols. I, II, III (Washington, D.C.: Government Printing Office, 1969).

Vinsonhaler, John F., "Improving the Accessibility of Educational Materials," USOE Project No. 5-1144, October 1967.

---, Basic Indexing and Retrieval System, Technical Manual (East Lansing: Learning Systems Institute, Michigan State University, 1968).